

**REMARKS**

The Final Office Action mailed January 25, 2008 has been carefully considered.  
Reconsideration in view of the following remarks is respectfully requested.

**Amendment to Claims 1, 4 and 5**

Claims 1, 4, and 5 have been amended for improved clarity and to more fully define what the Applicant considers to be his invention. Applicant believes that the amendment does not raise any issues beyond those already considered by the Examiner.

**Canceled Claims**

Claim 10 has been canceled without prejudice or disclaimer of the subject matter contained therein.

**Rejection(s) Under 35 U.S.C. § 112, First Paragraph**

Claims 1-10 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains or with which it is mostly nearly connected, to make and/or use the invention. Claim 1 has been amended to more clearly define the subject matter which the Applicant regards as his invention. The amended claim has support in the specification; for example, see paragraphs 69-70. Therefore, Applicant asserts that the Applicant had possession of the invention in amended claim 1 at the time of filing the application, and Applicant therefore respectfully requests withdrawal of the rejection under 35 U.S.C. § 112, first paragraph.

**Rejection(s) Under 35 U.S.C. § 112, Second Paragraph**

Claims 4-6 and 9 stand rejected under 35 U.S.C. § 112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Examiner states that “the material” lacks antecedent basis. Claims 4 and 5 have been amended to refer to “the II-VI semiconducting material,” which has antecedent basis. Claims 6 and 9, which depend directly and indirectly on claim 5, also particularly and distinctly claim the subject matter. Therefore, withdrawal of the rejection under 35 U.S.C. § 112, second paragraph, is therefore requested.

**Rejection Under 35 U.S.C. § 102 and Alternatively 103(a)**

Claims 1-4 and 7-8 stand rejected under 35 U.S.C. § 102(b) and § 103(a) as allegedly being anticipated by D De Nobel (U.S. pat. no. 2,865,793). Alternatively, they are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *de Nobel* in view of *Janik* et al. (“Ohmic contacts to p-type cadmium telluride and cadmium mercury telluride”, Journal of Physics, Vol. 16, pp. 2333-2340, 1983).

In particular, the Examiner states that *de Nobel* discloses a “method . . . characterized in that at least one electrode is formed by electrochemical deposition of the metal from a solution of a chloride of the metal in pure hydrochloric acid.” (Office Action at 3.) Respectfully, however, *de Nobel* does not disclose the use of pure hydrochloric acid, particularly as defined in amended claim 1.

The *de Nobel* reference, and the prior art in general, uses a diluted HCl solution, ranging in concentration from 0% to about 20% of pure hydrochloric acid (by weight). However, *de Nobel* does not refer to pure hydrochloric acid. The use of pure hydrochloric acid is not inherent in *de Nobel*, because the reference states that the metal-chloride solution may be “not acidified” (col. 2, ll. 21). At most, *de Nobel* discloses a solution of only 20% HCl, and does not disclose a pure HCl solution as defined in amended claim 1.

It will be appreciated that, according to the M.P.E.P., a claim is anticipated under 35 U.S.C. § 102 only if each and every claim element is found, either expressly or inherently described, in a single prior art reference.<sup>1</sup> The aforementioned reasons clearly indicate the contrary. As claims 2-4 and 7-8 depend either directly or indirectly on claim 1, simply adding limitations thereto, they also cannot be anticipated by *de Nobel* or the prior art in general, and withdrawal of the 35 U.S.C. § 102 rejection based on claims 1-4 and 7-8 is respectfully urged.

As to the Examiner’s alternative rejection under 35 U.S.C. § 103(a) on the basis of *de Nobel* in view of *Janik*, The Applicant also traverses, for the same reasons discussed above. In addition, Applicant submits that amended claim 1 is not obvious under the *Graham*<sup>2</sup> factors, which is the basis under which obviousness arguments are now to proceed after the decision in

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<sup>1</sup> Manual of Patent Examining Procedure (MPEP) § 2131. See also *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

<sup>2</sup> *Graham v. John Deere Co.*, 383 U.S. 1, 148 U.S.P.Q. 459 (1966).

*KSR International Co. v. Teleflex Inc.*, 82 U.S.P.Q. 2d 1385 (2007) (F.R. vol. 72, No. 195, 57426 at 57527, Oct. 10, 2007). The use of pure hydrochloric acid would not have been obvious to one of skill in the art prior to this application. The present invention solves the problem, *inter alia*, of manufacturing electrodes on a semiconducting material of type II-VI, or on a compound of this material, where the electrodes are able to have a larger thickness and better adhesion onto the material than in the prior art. (*See* Application para. 38.) To solve this problem, the method uses pure hydrochloric acid, as defined in amended claim 1 and in paragraph 70 of the Application. The use of pure hydrochloric acid makes it possible to use low metal concentrations and thus offers an advantage over the prior art.

Using pure hydrochloric acid solution is not taught or suggested in *de Nobel*, and is not obvious even in view of *Janik*, which *also* does not discuss or suggest pure hydrochloric acid. *De Nobel* states that the described process works “*even if* it is acidified to for example 20% of hydrochloric acid.” (col. 2, ll. 19–21) (emphasis added). In *de Nobel*, a concentration of 20% is viewed as an extreme, as indicated by the phrases “*even if*” (col. 2, ll. 19–21), “acidified or not, even to a HCL-content of 20%” (col. 1, ll. 60), and “acidified to 20% of hydrochloric acid or not acidified” (col. 2, ll. 29–30). It is not contemplated in *de Nobel* that the concentration would exceed 20% (or by *Janik*, which cites a *Nobel* paper but does not go further than *Nobel* in this regard). It is even less contemplated that pure hydrochloric acid would be used.

Also, in *de Nobel*, the electrodes are made of a noble metal such as Pt or Au. The deposition is carried out by applying a solution of a salt of the noble metal (e.g.  $\text{AuCl}_3$  or  $\text{PtCl}_4$ ), the concentration of which is between 0.5% and 50% (col. 1, lines 58-62). The solution is acidified with HCl (or not). At several places, *de Nobel* mentions that acidifying the solution, for example at a level of 20% of HCl, or not acidifying it, leads to the same result (col. 1, l. 61 and col. 2, ll. 19-21, 29-31). Therefore, the method of amended claim 1 is patentable and not obvious in view of *de Nobel* and/or *Janik*. Claims 2-9 being dependent on claim 1, they are also not obvious, and withdrawal of the rejection under 35 U.S.C. § 103(a) is therefore requested.

**Rejection of claims 5 and 8 Under 35 U.S.C. § 103 (a)**

Claims 5 and 8 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *de Nobel* in view of *Janik*. This rejection is respectfully traversed.

Claims 5 and 8 are dependent on independent claim 1, which as amended is patentable for the reasons described above. The arguments above are equally applicable here. The base claims being allowable, the dependent claims must also be allowable.

With respect to claim 5, the Office Action contends that *de Nobel* “does not expressly teach chemical etching to prepare the surface of the II-VI semiconducting material or the surface of the compound of the II-VI semiconducting material before depositing the at least one electrode. However, *Janik* et al teaches chemical etching to prepare the surface to prepare the surface of the II-VI semiconducting material before depositing the at least one electrode.” (Office Action at 5.)

*Janik* discloses etching with a solution of “Br<sub>2</sub>/CH<sub>3</sub>OH” (bromine and methanol) (p. 2333). However, no mention in *Janik* is made of using pure hydrochloric acid. Nor is mention of pure HCl found in *de Nobel*. This is an element that is entirely missing from the prior art, and no combination of *de Nobel* and *Janik* would lead one of skill in the art to this novel idea. As set forth in the present Application, more is required to practice the invention in claim 1 than merely substituting pure HCl with “Br<sub>2</sub>/CH<sub>3</sub>OH”. For example, paragraph 52 of the Application states that using an acidic medium for etching “leads to protecting the portions of the sample which must not undergo chemical etching or receive the metal coating, with positive photoresists.” Also, “the surface tension of both solutions . . . is such that it allows the use of drops of these solutions and therefore chemical etches and coatings which are limited to the surfaces intended for contact. These operations are unachievable with the Br-methanol mixture . . . .” (Para. 55.)

Furthermore, there are advantages to using chlorine that are not available with the use of bromine, such as the fact that “chlorine is used as a dopant in semiconducting materials” (para. 56) and that chlorine retains its aggressivity much longer than a Br-methanol solution (para. 58).

Thus, the inventions of claim 5 would therefore not be obvious to one skilled in the art, in view of *de Nobel* and *Janik*, or any combination of the two references.

Therefore, for the above reasons, claims 5 and 8 are patentable and not obvious in view of *de Nobel* and/or *Janik*, and withdrawal of the rejection under 35 U.S.C. § 103(a) is therefore requested.

**Newly-Added Claims**

Claims 11-13 have been added to further particularly point out and distinctly claim the subject matter regarded as the invention.

**Conclusion**

In view of the preceding discussion, Applicants respectfully urge that the claims of the present application define patentable subject matter and should be passed to allowance.

If the Examiner believes that a telephone call would help advance prosecution of the present invention, the Examiner is kindly invited to call the undersigned attorney at the number below.

Please charge any additional required fees, including those necessary to obtain extensions of time to render timely the filing of the instant Amendment and/or Reply to Office Action, or credit any overpayment not otherwise credited, to our deposit account no. 50-1698.

Respectfully submitted,  
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Dated: 05/27/2008

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